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Part II

Department of Transportation

Coast Guard

Tank Vessel Operations—Puget Sound

DEPARTMENT OF TRANSPORTATION

Coast Guard

[33 CFR Part 161]

Tank Vessel Operations—Puget Sound

AGENCY: Coast Guard, DOT.

ACTION: Notice of Proposed Rulemaking.

SUMMARY: On March 27, 1978, there was published in the **Federal Register** (43 FR 13240) an advance notice of proposed rulemaking which stated that the Coast Guard was considering issuance of regulations governing the operation of tank vessels in the Puget Sound area of western Washington State. Comments and suggestions were requested concerning possible approaches the Coast Guard could take to arrive at the best solution for protection of the area from environmental harm resulting from tank vessel or structure damage, destruction or loss. The regulations proposed in this notice would amend the Puget Sound Vessel Traffic Service Regulations (33 CFR Part 161) and are based in part upon comments and suggestions received in response to the advance notice. The proposed regulations prescribe additional equipment and operating requirements for tank vessels of 40,000 deadweight tons (DWT) and greater in specified portions of the Puget Sound VTS area. The proposal would also continue the current 125,000 DWT size limit on tank vessel operation in the VTS area. Additionally, the proposed regulations incorporate several changes to the Puget Sound VTS regulations that are directly related to the operation of tank vessels and that affect other vessels.

DATES: 1. Comments must be received on or before June 30, 1979.

2. Public Hearings: The Coast Guard will hold public hearings as follows:

Seattle, Washington: June 11, 1979 beginning at 9:00 am and June 12, 1979 beginning at 1:00 PM and reconvening at 7:00 pm in the north auditorium, 4th floor, Federal Building, 917 Second Avenue, Seattle, Washington.

Mt. Vernon, Washington: June 13, 1979 beginning at 1:00 pm and reconvening at 7:00 pm at the Town and Country Motor Inn, 2009 Riverside Drive, Mt. Vernon, Washington.

Port Angeles, Washington: June 14, 1979 beginning at 1:00 PM and reconvening at 7:00 PM in the conference room, 2nd floor, Administration Building, U.S. Coast Guard Air Station, Port Angeles, Washington.

ADDRESSES: Comments should be sumbitted to Commandant (G–CMC/81), (CGD 78–041), U.S. Coast Guard, Washington, D.C. 20590. Comments will be available for examination at the Marine Safety Council (GC–CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street, SW., Washington, D.C. 20590. Copies of studies referred to in this document are available for examination at the above address.

FOR FURTHER INFORMATION CONTACT: Captain R. A. Janecek, Office of Marine Environment and Systems (G–WLE/73), Room 7315, Department of Transportation, Nassif Building, 400 Seventh Street SW., Washington D.C. 20590, 202–426–1934.

SUPPLEMENTARY INFORMATION: Interested person are invited to participate in this rulemaking by submitting written data, views or arguments. Each comment should include the name and address of the person submitting the comment, reference the docket number (CGD 78–041), identify the specific section of the proposal to which each comment applies, and include sufficient detail to indicate the basis on which comment is made. All comments received before the expiration of the comment period will be considered before final action is taken on this proposal. Interested persons are invited to attend the public hearings and present oral or written statements on this proposal. It is requested that anyone desiring to make oral comments notify Captain P. J. Danahy, U.S. Coast Guard Marine Safety Council, (C–CMC/81), Room 8117, Department of Transportation, Nassif Building, 400 Seventh Street, SW., Washington, D.C. 20590, 202–426–1477, at least 10 days before the scheduled date of the public hearing and specify the approximate length of time needed for the presentation. Comments at the public hearings will normally be heard in the order the request to comment is received. It is urged that a written summary or copy of the oral presentation be included with the request.

Drafting Information

The principal persons involved in drafting this notice are: Captain Robert A. Janecek, Project Manager, Office of Marine Environment and Systems, and LT G. S. Karavitis, Project Attorney, Office of the Chief Counsel, U.S. Coast Guard.

Background

The proposed regulations would amend the Puget Sound Vessel Traffic Service regulations, 33 CFR Part 161. Tank vessels of 40,000 deadweight tons (DWT) or greater operating in the Puget Sound Vessel Traffic Service area would be required to comply with restrictions and conditions specific to tank vessel operations, in addition to general regulations, for enhancement of navigation and vessell safety, and protection of the marine enviornment of the Puget Sound area.

The Federal program for marine transportation safety and environmental protection consists of several interrelate operational programs which provide safety enhancing services to the marine transportation industry and a scheme of regulations which govern the conduct of the industry. In the Puget Sound area, a principal Coast Guard activity implementing this program is the Puget Sound Vessel Traffic Service.

The Coast Guard originally issued regulations for the Puget Sound Vessel Traffic Service (VTS) on July 10, 1974 (39 FR 25430). Minor changes were made on June 9, 1977 (42 FR 29481). The service was established because of congested vessel traffic and hazardous operating conditions.

In 1975, the Washington State Legislature enacted the Washington Tanker Law, with the "intent and purpose to * * * decrease the likelihood of oil spills on Puget Sound and its shorelines * * *" (RCW 88.16.170 (1975)). This statute, among other provisions, prohibited "oil tankers" greater than 125,000 DWT from entering Puget Sound and adjacent waters. On March 2, 1978, the U.S. Supreme Court, in the case of *Ray v. Atlantic Richfield Co., Inc.*, 435 US 151 (1978) declared portions of the Washington Tanker Law invalid based on constitutional grounds involving Federal preemption of State law. While litigation concerning the State law was in progress, tank vessel operators refrained from using vessels exceeding 125,000 DWT in Puget Sound and adjacent waters.

On March 14, 1978 (43 FR 12257, March 23, 1978), the Secretary of Transportation issued an interim navigation rule prohibiting entry of oil tankers in excess of 125,000 DWT into the U.S. waters of Puget Sound east of Discovery Island Light and New Dungeness Light. The rule was issued, pending possible preparation of additional navigation regulations by the Coast Guard, in order to provide a continuing scheme for controlling vessel

operation in Puget Sound and to avert a reduction in environmental protection. The concern that invalidation of the State statute could diminish the effectiveness of the existing scheme for controlling vessel operation (and thus cause a reduction in environmental protection in Puget Sound) necessitated the taking of temporary action to avert this possibility while the Coast Guard examined the necessity for additional regulations.

The Puget Sound VTS regulations were originally issued under the authority of the Ports and Waterways Safety Act of 1972. The Ports and Waterways Safety Act was also cited as the authority for the interim navigation rule. This Act has recently been amended by the Port and Tanker Safety Act of 1978. The amendments provide continuing authority for the Puget Sound VTS regulations, the interim navigation rule, and the regulations proposed by this notice.

Factors Considered by the Coast Guard

It is the purpose of these proposed regulations to provide to the navigable waters of the Puget Sound area and the resources therein a continuing level of protection from environmental harm resulting from vessel or structure damage, destruction or loss. A review of the legislative history of the Washington Tanker Law indicates that the concern underlying passage of that statute was the threat of a massive oil spill which might result from the grounding of a large tank vessel carrying crude oil. It is the scope and degree of the hazards presented by the operation of large tank vessels within this port and waterway configuration that have been the major policy issues considered in proposing these regulations. Due consideration has been given also to the other factors required by statute to be considered in the rule-making deliberative process.

Marine transportation of petroleum in Puget Sound involves both crude oil and petroleum products. There are seven refineries in the area: the Atlantic Richfield Company (ARCO) refinery at Cherry Point with 106,000 barrels per day capacity; the Mobil refinery near Ferndale with a 71,500 barrel per day capacity; the Shell and Texaco refineries at March Point near Anacortes with a capacity of 91,000 and 78,000 barrels per day respectively; the Chevron asphalt refinery at Richmond Beach, with a capacity of 4,500 barrels per day; and the U.S. Oil & Refining Company, Sound Refining Inc. and United Independent Oil Company in Tacoma with capacities of 21,400, 8,500 and 1,000 barrels per day, respectively.

Prior to 1973, the four northern refineries, (ARCO, Mobil, Texaco and Shell) received most of their crude from Canadian supplies via the Trans Mountain Pipe Line. Since that time, Canadian supplies have been reduced gradually, and today all crude is received via tank ship, with the exception of that required by the Chevron refinery. The Chevron refinery operates mainly on residual and distillate feed stocks supplied overland, supplemented by small and infrequent deliveries via tanker. The two southern refineries have always received their crude by tanker.

Historically, fifteen tankers larger than 125,000 deadweight tons (DWT) had entered the Puget Sound area, delivering to the ARCO refinery, before implementation of the State law limiting tank vessel size. The Arco dock, with a water depth of 65 feet at Mean Lower Low Water, has the greatest capacity to accommodate fully loaded vessels of any facility in the region, and can berth vessels of approximately 200,000 DWT. However, prior to the effective date of the Washington Tanker Law, at least two other Puget Sound refiners had under study plans to expand their docks to accommodate tank vessels in excess of 125,000 DWT.

ARCO is also the only refinery in the region capable of using significant quantities of Alaskan North Slope crude stocks. Currently, approximately 18% of the Alaskan oil shipped from Valdez is being delivered to Puget Sound. The U.S. flag vessels that are regularly used to carry crude oil from Valdez to the contiguous 48 States include approximately ten vessels over 125,000 DWT. ARCO has two 189,000 DWT tank ships scheduled for delivery, one in 1979 and the other in 1980. Shell has one 189,000 DWT vessel in service on long-term charter and expects delivery of a second in 1979. The stated intent of both companies in acquiring these vessels was that they be used freely to carry Alaskan oil to United States ports, including Puget Sound.

It would be unrealistic, however, to consider only the United States flag tanker fleet in assessing the potential sizes of vessels that could call at Puget Sound ports. The major Puget Sound refineries, with the exception of ARCO, cannot process significant quantities of Alaskan crude oil, which must by law be carried to U.S. ports in U.S. flag vessels. These refineries were designed and built to use relatively low sulphur crude oil from Canada and California. They are not readily adaptable to the modifications necessary to process the relatively high sulphur content Alaskan crude. Oil from California and Canada is not currently available and the principal supply for these refineries is Indonesia and the Persian Gulf region. Due to economic forces in the world tanker charter market, crude oil feedstocks for these refineries are carried, for the most part, by foreign flag tankers. In 1977, tankers over 125,000 DWT constituted approximately 60% of the total world capacity. Due to economies in operation of the larger vessels versus smaller vessels, it is likely that larger vessels would be employed, within the capacity of the refinery dock facilities to accommodate them.

Additionally, refineries located in the Mid-Western States that could be supplied by a crude oil pipeline from the Puget Sound area would not be able to use Alaskan crude for the same reasons as the Puget Sound refineries. A current proposal for a tanker terminal at Port Angeles includes facilities to accommodate tankers as large as 325,000 DWT. Approval of any proposed pipeline and associated transshipment terminal in the study area has not yet been granted by the several Federal and State agencies from which permits for construction must be obtained.

In developing these proposed regulations, the Coast Guard has considered the risk of environmental harm presented by tank vessels of all sizes. Several studies have been conducted to determine if there exists a direct relationship between tank vessel size and pollution incidents. A study conducted by the Congressional Office of Technology Assessment (OTA) indicated that such a direct relationship exists. This assessment was based on OTA data which indicated that larger tank vessels have a higher casualty rate "per port call" than smaller tank vessels. Analysis of the OTA report by both the Coast Guard and Department of Transportation concludes that the use of port calls as a measure of vessel risk exposure is inappropriate and misleading. Using the data in the OTA report, Coast Guard and Department of Transportation analyses reflect that: (1) For tankers transporting the same amount of oil over the same distance, the number of accidents and spills decreases steadily as tanker size increases (2) comparative overall spill volumes for tankers under 100,000 DWT are about 2½ times greater than for tankers over 100,000 DWT for the same amount of oil transported. However, these conclusions do not take tanker age into consideration. Some studies indicate a strong relationship between spill potential and tanker age. Other studies evaluated by the Coast Guard

and Department of Transportation indicate that the distance traveled in port, number of port transists, and number of cargo transfers, have a much greater correlation to spill risk than does vessel size.

Although the results of available study data are not conclusive, this data does indicate that the use of larger tankers in Puget Sound would result in fewer pollution causing incidents, and the overall spill volume would be equal to or less than the spill volume from smaller tanker operations.

The question of vessel size, however, cannot be adequately considered in isolation from the specific configuration of the waterways and other local conditions prevailing in the Puget Sound region. Although present dock facilities limit the size of tankers to a maximum of about 200,000 DWT, the waterways proper can accommodate virtually the largest vessels existing in the world today. In assessing the scope and degree of the hazards, the Coast Guard sponsored a comprehensive study of the ability of tank vessels to navigate selected passages in the Puget Sound area safely. The study was conducted at the U.S. Maritime Administration's National Maritime Research Center by the Computer Aided Operations Research Facility (CAORF). The study employed off line fast computer time simulation and real time computer simulation using pilots. Safety of navigation of different size tankers was investigated under "worst case" conditions of weather and tidal currents. The ability of tankers to navigate safely under these conditions was examined first with no ship system failure, then with propulsion failure, steering failure, and both propulsion and steering failure simultaneously. The effectiveness of tug assistance to restrain a tanker experiencing failure in manuevering systems and prevent grounding was examined. The report of this study is entitled "An Investigation Into Safety of Passage of Large Tankers in the Puget Sound Area". This report can be obtained from the National Technical Information Service, Springfield, VA; Report No. CG–D–79–78.

Results of the study indicate that tanker size is not a primary factor affecting the ability of tankers to navigate safely the Puget Sound region. Vessels from 40,000 DWT to 400,000 DWT exhibited a nearly equal capability to navigate the selected passages safely without assistance, given full propulsion and steering capability. However, the study indicated that, under the environmental conditions examined, a grounding was almost certain to occur in certain locations should an unassisted tanker experience failure of either propulsion or steering. The study suggested that, under these conditions, assisting tugs could be an effective means of preventing a grounding that would result in a pollution incident.

The CAORF study described above examined primarily the ability of tankers to navigate safely without consideration of the human factor; that is, the effect of human judgment on the ability of a given tanker to navigate safely. A limited amount of "real time" simulation was performed using actual pilots in the CAORF simulator. The results were inconclusive, but seemed to support the findings of a recent Coast Guard analysis of shiphandling and piloting practices in world ports. This analysis focused on ports having extensive experience in accommodating large tankers and suggested that, as tanker sizes increase, there is a point at which it becomes increasingly difficult to determine proper control measures accurately, based solely on visual perception and human judgment. This point varies among individuals but appears to occur in the 100,000 DWT to 200,000 DWT range. Means to enhance and augment visual information available to the person directing the movements of a vessel include such navigational equipment as a pitometer log to measure speed through the water, a Doppler navigation device to depict vessel movement in relation to fixed objects and availability of certain key ship control information (rudder angle, propeller shaft RPM, rate-of-turn, etc.) at all ship control locations.

The total loss of a tanker with the discharge of its entire cargo in the Puget Sound area is extremely remote. However, the grounding of a relatively large tanker would probably result in a discharge of a greater volume of oil than the grounding of a small tanker in the same circumstances. Factors influencing movement of oil spills in the Puget Sound area are extremely complex. However, studies by the National Oceanic and Atmospheric Administration and others indicate that it would be unrealistic to expect that effects of a large spill would be localized.

The value of the Puget Sound area to the general welfare, economic stability and liveability of the western Washington region is extremely high. Commercial and sport fishing, waterfowl hunting, recreational boating and tourism contribute hundreds of millions of dollars annually to the region's economy. Additionally, the shoreline areas of the region are used extensively for other recreational purposes. The marine waters in nearly all the region are classified by the Washington Department of Ecology, pursuant to U.S. Environmental Protection Agency requirements, as "extraordinary," the highest quality classification.

The Puget Sound area is also an important regional petroleum processing and distribution center. The refineries located in the area supply petroleum products to parts of Oregon, Idaho, Montana, Alaska and California in addition to all of Washington State. An evaluation of the economic impact of these regulations was conducted in connection with the Environmental Impact Statement for the regulations. This evaluation indicated that the effects of removing the 125,000 DWT size limit on tankers, including consideration of cost attributable to the proposed regulations, would mean a possible net savings of from $13 to $19 million annually. There is, therefore, a significant national energy transportation and economic interest that must be considered.

The proposed regulatory requirements attempt to address reasonable risk reduction in the operation of tank vessels of all sizes as a responsible balancing of the many competing and conflicting interests. But despite the tendency of studies to indicate that regulated and constrained operation of larger tankers presents the preferred environmental risk, it is considered reasonable to continue the 125,000 deadweight ton size limitation while evaluating operating experience with these proposed regulations and the effectiveness of other regulatory and navigational schemes in reducing risk of tanker spills.

Examination of the issues in connection with this rulemaking has indicated the desirability of several changes to the Puget Sound VTS regulations not directly related to the operation of tank vessels. These changes, which are incorporated in the proposed amendments to 33 CFR Part 161 below, include: expansion of the VTS Area to include all the navigable waters of the United States within Haro Strait; realignment of the Puget Sound Traffic Separation Schemes (TSS) Precautionary Area "SA" to Precautionary Area "T"; a requirement for all ferry vessels to report their movements to the VTC regardless of time of day or visibility conditions; extension of applicability of the Communication Rules to include small passenger carrying vessels, less than 100

gross tons, carrying more than six passengers; and measures to control the damaging effects of vessel wakes.

Discussion of the Proposed Regulations

The advance notice of proposed rulemaking requested comments and suggestions from interested parties concerning the possible approaches the Coast Guard could take in this rulemaking. One-hundred persons submitted written comments for consideration. Additionally, eighty-nine persons submitted comments in response to the interim navigation rule and its extension. A Public hearing was held in Seattle on April 20 and 21, 1978 to receive comments and suggestions. Forty-two persons made statements at the hearing. Full consideration has been given to all comments received, insofar as they relate to matters within the scope of the rulemaking.

By far the greatest number of comments concerned a size limit for tankers entering the Puget Sound area. One-hundred eighty-nine persons supported a maximum size limit, the majority endorsing the 125,000 DWT limit which originated in State law and which has been continued by the Federal interim navigation rule. Thirty-six persons opposed a size limit.

It is apparent that a limitation on tanker size continues to be an exceedingly difficult question to resolve. The sensitivity of the issue is heightened by its complexity, and the complexity is increased by the inability of current studies to establish conclusively whether the risks are reduced by the operation of large or smaller vessels, by the uncertainty in determining if or when large becomes too large, and by the difficulty of reducing acceptable risk to absolute terms in any case. Complexity also relates to efforts to balance local interest against the national interest, energy needs against environmental concerns, and transportation economies against the staggering cleanup costs associated with high volume spills.

It is unlikely that further study of available data can yield more definitive bases for either sustaining or eliminating the tank vessel size limitation. But future events and factors may reduce the complexity of the question to more manageable proportions or tilt the balance to permit a more confident decision. A crude oil pipeline and associated terminal to service mid-western states and local refineries for example, could presumably reduce the need for VLCC operation in Puget Sound. Completion of the current Puget Sound Vessel Traffic Service radar expansion project will enhance its capabilities to contribute to safer vessel operation. Experience will be gained with the requirements and limitations which these regulations contemplate, and time will permit evaluation of the effectiveness of other requirements developed for the safe operation of larger tank vessels. In that regard and in recognition of the significance of human judgment in vessel operations, experience in several world ports suggests the desirability of multiple pilots for the movement of very large vessels. Foreign experience also demonstrates the wisdom of additional ship handling training. Development of emergency ship handling simulator training programs could add another dimension to the safe operation of very large vessels in the Puget Sound. 10

Thirty-nine commenters supported the alternative of requiring tug assistance or escort of large tankers; two commenters opposed such a requirement. The Coast Guard agrees that tug "assistance" and "escort" requirements can be of material value in the Puget Sound area to prevent or mitigate the effects of a tanker grounding. In strict terms, "escort" is considered to mean "accompanying" a tanker, with no connection in the way of lines or hawsers between the two. This concept is adopted in the proposed regulations for the relatively open and less restricted areas in the study region. It is the judgment of the Coast Guard, however, that in the event of loss of propulsion or steering in most passages in the area, insufficient time would be available for lines to be made up between tanker and tug and for the tug to begin to exert a restraining force and be of value in preventing a casualty. For these passages, the proposed regulations adopt the concept of tug "assistance," defined to mean tugs directly connected to the tanker at all times.

Fourteen commenters supported imposing speed limits on large tankers; one commenter opposed speed limits. The tug assistance requirements of the proposed regulations have the effect of limiting the speed of tankers in certain passages. Also, § 161.157 requires that all vessels proceed at a speed consistent with minimizing wake damage.

Twenty-five commenters supported additional pilotage requirements in the Puget Sound area. There were no comments received in opposition to such a requirement. While the Coast Guard agrees that effectiveness of human judgment in directing the movements of tankers may be the single greatest factor in reducing the risk of tanker casualties in the area, additional pilot requirements are considered unnecessary for the size tank vessels addressed by these regulations.

Five comments were received concerning establishment of minimum keel or bottom clearance for large tankers. Of these comments, four were in opposition to such a requirement. One substantive comment in opposition argued that "The depth of the water itself is the restrictive factor for safe vessel transit." While agreeing generally with this assertion, the Coast Guard does not believe that it necessarily follows that bottom clearance standards are without value. Factors that can diminish at-rest bottom clearance under actual operating conditions include such things as water level, water density, squat, trim, list, heel in turns and wave action effects. The three foot minimum "net bottom clearance" requirement of the proposed regulations follows the recommendations for rocky bottom channels of the Permanent International Association of Navigation Congresses (PIANC) in their paper "Big Tankers and their Reception" (1974). Three feet is also the design criterion for bottom clearance adopted by the U.S. Army Corps of Engineers for rocky bottom channels.

Eight commenters suggested establishing restrictions on the movement of tank vessels during time of hazardous conditions. No comments were received in opposition. The "hazardous condition" most frequently specified by commenters was adverse weather conditions, such as limited visibility and high winds. The Coast Guard agrees that movements of large tankers under such adverse circumstances increases the risk of casualties. The CAORF study concludes that, under certain combinations of vessel speed restrictions and high winds from certain directions, loss of directional control of tankers with almost certain probability of grounding is unavoidable in confined waters. Generally, this condition occurs when a fully laden tanker experiences quartering winds in excess of ten times the vessel's speed through the water. Wind speeds even approaching these conditions require such extreme application of rudder and propulsion forces to maintain directional control that the ability of the vessel to maneuver to windward is severely impaired. The proposed regulations adopt limits on the movement of tankers during high wind conditions intended to avert this possibility.

Nine commenters supported the alternative of limiting or controlling the time of entry into, movement within or departure from the Puget Sound area.

Five commenters opposed such requirements. Most commenters supporting the alternative suggested that movements be limited to daylight hours. The Coast Guard does not agree that "daylight hours only" operation will improve navigation safety within the area. There are no historic accident data indicating that nighttime tank vessel operations are more likely to result in vessel casualties.

Three commenters suggested that additional navigation equipment be required for tankers. The Coast Guard agrees that additional equipment can be valuable in assisting the person directing the movement of a tanker to judge his required actions accurately. The proposed regulations adopt requirements for equipment which world-wide experience has shown can be effective for this purpose. Additionally, it should be noted that the Coast Guard announced in the **Federal Register** for July 24, 1978 (43 FR 32112) a requirement for a second marine radar in addition to the radar required by 33 CFR 164.35(a) for vessels of 10,000 gross tons or more. This requirement is effective June 1, 1979. Concerning collision avoidance systems to augment these two radar systems, the Port and Tanker Safety Act of 1978 requires that all tank vessels of 10,000 gross tons and above which carry oil or hazardous materials in bulk be equipped with electronic relative motion analyzer equipment meeting specifications established by the United States Maritime Administration. This requirement is effective July 1, 1982 or such earlier date as agreed to internationally and accepted by the United States. The Coast Guard is participating in an Intergovernmental Maritime Consultative Organization (IMCO) proceeding which will consider this matter.

Two commenters suggested the Coast Guard consider the requirement for an English speaking or understanding person among the crew of a large tanker. Section 9(a)(7) of Sec. 2 of the recently enacted Port and Tanker Safety Act of 1978 requires that "No vessel, subject to the provisions of Section 4417a of the Revised Statutes as amended, shall operate in the navigable waters of the United States * * * if such vessel, while underway, does not have at least one licensed deck officer on the navigation bridge who is capable of clearly understanding English."

Nine commenters suggested that regulations under consideration be extended to encompass the entire Strait of Juan de Fuca to Cape Flattery. In partial agreement with these suggestions, proposed regulations have been extended beyond the area described in the advance notice to include the entire Vessel Traffic Service Area. In addition, proposed § 161.180 expands the VTS Area to include all navigable waters of the United States in Haro Strait and its southern approaches.

Concerning a related matter, thirty-five commenters suggested extension or improvement of the existing Puget Sound Vessel Traffic Service (VTS). These regulations proposed that the VTS Area be extended to include all the navigable waters of the United States within Haro Strait. Also, the Coast Guard has implemented a program to improve current radar surveillanceand to expand radar surveillance to include the entire Strait of Juan de Fuca, the southern portion of the Strait of Georgia, Rosario Strait, Admiralty Inlet and Puget Sound south to Vashon Island. These improvements are designed to be compatible with United States/Candian plans for future joint control of vessel traffic in the area.

Twenty commenters suggested the Coast Guard require large tankers operating in the Puget Sound area to possess special design and construction features such as double-bottom construction, clean ballast tanks, segregated ballast tanks, twin propellers, twin rudders, etc. Regulation of design, construction or maintenance of tankers is not addressed in this rulemaking proposal. The Coast Guard has consistently taken the position that regulation of vessels design and construction should not be predicated on regional or local conditions, as to do so would impair the existing national scheme of design and construction standards and jeopardize coordination of national standards with those recognized by the international maritime community. It is the Coast Guard's intention to move as expeditiously as possible toward adoption and implementation of the results of the recent International Conference on Tanker Safety and Pollution Prevention (TSPP). Proposed Federal regulations incorporating these design and construction standards developed by the Conference were published on 12 February 1979 (44 FR 8984) under authority of the Port and Tanker Safety Act.

One commenter forwarded a "White Paper" prepared by the Congressional Office of Techonology Assessment (OTA), suggesting that tanker size-pollution casualty rate probabilities developed in the paper be considered by the Coast Guard.

The paper, a continuation of a previous OTA study entitled "An Analysis of Oil Tanker Casualties, 1969–1974", concludes that a direct relationship exists between tanker size and the probability of a pollution causing incident "per port call."

The Coast Guard believes that serious questions must be raised concerning the methodology used for this paper. Several problems occur in the usage of the raw data, such as the inappropriate use of "port calls as a measure of vessel exposure and the failure to differentiate between small and catastrophic spills. The problems caused by such a technique are recognized by OTA in previous studies, but are ignored in the "White Paper". Other problem areas involve misleading headings on graphs and tables, the absence of any modifying data to account for voyage frequency or tanker usage rate by class size, and lack of any data for operational discharges (approximately 80% of total spillage per year worldwide).

For the reasons noted above, analyses perfomed by both the Coast Guard and the Department of Transportation consider the current OTA studies, purporting to show a direct relationship between vessel size and the risk of a pollution caualty incident, inappropriate and misleading.

One commenter suggested that the Coast Guard is obligated in this proposed rulemaking to observe the requirement of the Coastal Zone Management Act of 1972 (16 U.S.C. 1456) that Federal activities affecting the coastal zone of a State be consistent with the goals and policies of that State's coastal zone program. The Coast Guard believes that implementation of the proposed regulations will be supportive rather than conflicting with explicit policies of the State of Washington. Coast Guard activities significantly affecting the coastal zone of states with approved management programs will be fully consistent, to the maximum extent practicable, with such programs unless compliance is prohibited based upon the requirements of existing law applicable to the Coast Guard's operations.

Specific Discussion of Proposed Regulations

Proposed § 161.101(c)(5). This proposal would amend applicability of the Puget Sound VTS regulations to include small passenger vessels inspected under Subchapter "T" of Title 46, Code of Federal Regulations, certificated to carry more than six passengers. There are many small

passenger vessels of less than 100 gross tons operating in the Puget Sound area which carry up to 496 passengers on harbor tours and excursions to nearby points. Compliance with this proposed amendment would require that all small passenger vessels carrying more than six passengers have the radiotelephone equipment necessary to comply with the reporting requirements of §§ 161.128, 161.131 and 161.142. These vessels are presently required to have radiotelephone equipment installed as a condition of certification. Modification of this equipment to include the VTS frequency may in most cases be very simple; in others, additional equipment may be necessary.

Proposed Section 161.101(d). The proposed regulations are applicable to all tank vessels of 40,000 deadweight tons or greater carrying oil or hazardous substances in bulk. "Hazardous Substances" are defined in §161.103(b) as those described by the Environmental Protection Agency in 40 CFR Part 116. It should be noted that, within this general applicability framework, specific applicability of different sections varies. For instance, the Equipment Requirements of proposed § 161.144(b) apply to tank vessels of 100,000 deadweight tons or above.

Proposed § 161.105(f). This proposed amendment would include the International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS) among the applicable laws or regulations not affected by the Puget Sound VTS regulations. The 72 COLREGS apply in a portion of the Puget Sound VTS Area.

Proposed § 161.107(a). This proposed revision would clarify the authority of the Vessel Traffic Center to control and supervise, under specified conditions, the movements of vessels operating anywhere in the VTS Area.

Proposed § 161.122(b). This proposed amendment would require that tank vessels of 40,000 deadweight tons or greater be equipped with two VHF–FM radiotelephones, one of which must be battery powered. Both radiotelephones must be capable of operating on the designated VTS frequency. One of the radiotelephones may be that which is installed in compliance with the Vessel Bridge-to-Bridge Radiotelephone Regulations (33 CFR Part 26). The battery powered radiotelephone may be the hand-held portable type routinely used by pilots.

Proposed § 161.130. This proposed amendment would require that tank vessels of 40,000 DWT or above report sufficient information to enable the VTC to determine if the vessel is in compliance with the tank vessel rules, contained in proposed §§ 161.143 to 161.146.

Proposed § 161.135(a). This proposed amendment would require that the VTC be promptly notified of any failure, casualty or impairment of ship systems critical to the safe navigation of the ship.

Proposed § 161.136(a). Partial exemption from the reporting requirements of the Puget Sound VTS regulations is granted ferry vessels in present § 161.136(a). The original reason for this partial exemption was that these vessels operate on published schedules, and for the most part, on routes which cross the TSS. It was therefore assumed that repeated transmission of the information required for reporting movements by each ferry would be unnecessary. Experience has shown that, although the ferry schedules are indeed quite reliable deviations from the scheduled movements are frequent enough that information about ferry movements is unacceptably incomplete. At least one near collision involving a ferry vessel and a tank vessel can be attributed in part to the VTC's lack of knowledge about the ferry's movements. In proposed § 161.136(a), continued recognition is given the repetitive nature of ferry movements by requiring an abbreviated reporting procedure.

Proposed § 161.143(a). This amendment would continue the prohibition on tank vessels over 125,000 DWT, now contained in the Puget Sound Interim Navigation Rule.

Proposed § 161.143(b). This amendment would prohibit the movement of tank vessels of 40,000 deadweight tons or above through Rosaio Strait, Haro Strait, Gumes Channel, Bellingham Channel, Admiralty Inlet and Puget Sound when winds exceed or are predicted to exceed 40 knots as reported by the VTC. The CAORF study sponsored by the Coast Guard concludes that vessel maneuverability becomes marginal as wind velocity from certain directions relative to the vessel approaches ten times the vessel's speed through the water. Since vessel speed through these areas will in effect be limited by the tug assistance requirements of proposed § 161.146, it is considered imprudent to permit transit of these areas when winds exceed 40 knots. Available information indicates that this condition exists approximately two percent of the time.

Proposed § 161.143(c). The requirement of this proposed amendment to keep to the center of a one-way channel or right inside quarter of a two-way channel whenever safe and practicable under existing circumstances is intended to provide the greatest safety margin possible for vessels transfer during emergency stopping or maneuvering.

Proposed § 161.143(d). This amendment would require a minimum "net bottom clearance" of three feet at all times. The reason for adopting this standard, sometimes referred to as "keel clearance", is discussed in the above analysis of comments received in response to the advance notice. Compliance with this requirement would mean maintining a clearance between the bottom of a tank vessel and the bottom of a channel of at least three feet at all times, making allowance for such things as water level or state of the tide, water density, squat (the tendency of a vessel to sink lower into the water when in motion and in proximity to the bottom), trim, list, heel of the vessel in a turn and wave action effects.

Proposed § 161.144. This amendment would require several items of navigation safety equipment in addition to that equipment presently required by § 164.35 of the Navigation Safety Regulations. The effective date of this section has been deferred for six months so as to permit reasonable time for compliance. This equipment would be required as a condition of entry into the Puget Sound area for tank vessels. The requirements of § 161.144(a) for a "means of instantaneously determining ship speed through the water", which can be a pitometer log or equivalent instrument, would apply to all vessels of 40,000 DWT or greater. The requirements of § 161.144(b)–§ 161.144(d) would apply to vessels of 100,000 DWT or greater. Rudder angle indicator and propeller shaft RPM indicator are commonly installed items of ship control equipment in most vessels. The rate of turn indicator and Doppler sonar speed log are less common. Information from all these systems must be available to the person directing the movements of the vessel at the main steering station of the vessel, and information from gyrocompass, shaft RPM indicator and rudder angle indicator must be available on the bridge wings.

Proposed § 161.145. This amendment would require that all tank vessels of 40,000 DWT or above operating within certain defined sections of the Puget Sound VTS Area be "assisted" or "escorted" by tugs of a minimum power determined by applying the criteria of the proposed regulations. "Tug assistance" is defined in proposed § 161.103(h) as "* * * tug or tugs * * * physically connected to the vessel in

such a manner as to be capable of applying required forces with minimum time delay." "Tug Escort" is defined in proposed § 161.103(i) as "* * * Tug or tugs * * * accompany the vessel and be immediately available to be connected to the vessel to provide assistance as required." "Tug Assistance" would be required in Rosario Strait, Bellingham Channel, Guemes Channel, Haro Strait, Admiralty Linlet—Puget Sound and connecting waters and Port Angeles. Either "Tug Escort" or "Tug Assistance" would be required in all other specified sections of the VTS Area.

The intent of this proposed section is to ensure that sufficient tug forces be provided to prevent a disabled tank vessel from grounding. The astern static bollard pull force proposed in § 161.145(b) would provide sufficient braking forces to stop vessel movement through the water within limits of safe navigability by applying a backing force in a direction opposite to the vessel's heading and parallel to its centerline. The ahead static bollard pull force proposed in § 161.145(a) would provide tug forces capable of towing a vessel against the maximum currents that may normally be expected within the VTS area.

Normally it is expected that the "tug escort" bollard pull requirements of § 161.145(a) for a given vessel would be met more than adequately by the tug or tugs employed to meet the "assistance" requirements of § 161.145(b) for the intended route of the vessel. It is possible under certain conditions of loading the tug escort requirement will be the governing factor.

Displacement tons is used as the standard of applicability in § 161.145(b) rather than gross tons, net tons or deadweight tons. Use of displacement tons permits a degree of flexibility for vessels transiting the area when not fully loaded. In considering the requirements for tug escort and assistance, the momentum of the vessel and cargo governs the restraining force necessary to prevent grounding. Momentum is the product of mass and velocity. The mass of water displaced by the vessel is the approximate inertial mass of the vessel and its cargo. Compliance with the proposed regulations would, therefore, require that the matter of a tank vessel compute the displacement tonnage prior to the vessel entering or getting underway within the VTS Area. The information necessary to make this computation is required aboard all tank vessels for other purposes and should be readily available.

The formula prescribed in § 161.145(b) for determining required tug assistance bollard pull forces is based on the simple physical relationship that, in order to stop a weight, "D", moving at a velocity, "V", within a given distance of travel, "T", "g" being the acceleration of gravity; a force, "F", is required:

$$F = \frac{DV^2}{2_{gT}}$$

To account for other factors such as the additional dynamically varying forces of friction and the delay time in applying the restraining force, a factor of .75 was selected, based on analysis of CAORF study data. Use of this factor results in a reduction of the force "F" requirement. Given an allowable transfer distance to an obstruction or shoal area, "Tr", the distance traveled was assumed for purposes of simplification to be along a circular arc such that

$$T = \frac{\pi}{2}$$

Finally, the factor "K" incorporates conversion factors to account for the different units (e.g. knots, feet, tons, pounds) used in the equation, and the acceleration of gravity. The final relationship is then:

$$F = KDV^2$$

where "k" is a unique value for each allowable transfer, and:

$$K = \frac{47.433}{Tr}$$

It is recognized that the foregoing formulas, designed to be readily used by the pilot or master, are simplifications of a very complex system of forces acting on a vessel. Since the best mathematical formulation embracing all the inertia, hydrodynamic, and aerodynamic forces acting on a vessel is so complex that it can be solved only as a step function on a large computer, the service of CAORF were engaged to make a large number of simulated runs to determine advance and transfer under various conditions. The foregoing simplied formulas, which are in terms of variables which have physical significance to the ship master and pilot, have been adjusted through the use of the 0.75 factor to reflect safe practice as deduced from detailed analysis of the CAORF data.

Since the displacement tonnage, "D", will be constant for that particular voyage, the maximum assisting tug force, "F", may be caluclated by determining the maximum desired vessel speed through transit areas represented by the largest "K" factor. Once tugs have been assigned, allowable speeds for different transit areas may readily be determined for each value of "K" by mathematical calculation or by reference to graphs 161.143(a) through 161.143(h). Additional information concerning the derivation of these formulas may be obtained from: Commandent (G–WLE), U.S. Coast Guard, 400 Seventh Street, SW., Washington, D.C. 20590.

Under exisitng § 161.109, approval of alternative means of compliance with the tug assistance requirements of proposed § 161.145(b) may be granted. The Coast Guard has conducted experiments using a large tug made up in a pushing/steering configuration against the transom stern of a 120,000 DWT tanker. In these experiments, the tug was able to effectively control the tanker at speeds up to six knots under conditions of simulated loss of propulsion and rudder failure at hard left (30°). At six knots, the tug was able to limit total transfer of the tank ship to approximately 1,500 feet, restoring the ship to its original heading. The tug was also effective in working to turn the vessel as quickly as possible to a course 180° opposite to its original course, with a total transfer at six knots of 2,400 feet and at eight knots of 2,700 feet. The report of these experiments is available from the National Technical Information Service, Springfield, Va. Report No. CC–W–1–79. It should be noted that tugs of unconventional design, capable of exerting greater directional forces than conventional designs, seem to offer great promise in assistance of large vessels. Any proposal of alternative compliance using such tugs will be given full consideration by the Coast Guard.

Proposed § 161.145(d). This amendment requires that sufficient tug assistance forces be available to compensate for minimum vessel speeds considered necessary to maintain adequate maneuverability under prevailing wind conditions. (See comments under "Proposed § 161.143(a)" for further explanation of wind effect.)

Proposed § 161.157. This amendment is proposed to prevent bank erosion, property damage, and water pollution resulting from breaks in cargo transfer lines from vessel surges caused by the wake of a passing vessel. The Coast Guard has received many complaints of wake damage in the areas covered by this section. Incidents of wake damage have usually been experienced during periods when the tide exceeds a stage of 11.0 feet at Seattle, Washington.

Proposed § 161.174(a)(4). The purpose of this revision is to add the equipment required by proposed § 161.144 and other critical ship control information systems to the list of systems and equipment that must be functionally

unimpaired prior to a vessel entering Rosario Strait.

Proposed § 161.174(b). This revision would require that tank vessels of 75,000 deadweight tons and above not enter Rosario Strait unless permission is granted by the VTC. The present standard procedure of the VTC is to permit only one way traffic in Rosario Strait when movements of vessels of 75,000 deadweight tons or above take place. The VTC will exercise discretionary authority to insure that entry of a tank vessel of 75,000 deadweight tons or larger into Rosario Strait will not result in development of a meeting or overtaking situation involving that vessel and another deep draft vessel.

Proposed § 161.180. This amendment would extend the Puget Sound VTS Area to include all of the navigable waters of the United States located within Haro Strait. This extension includes the channel through Haro Strait used by deep draft vessels transiting the area. This amendment would provide additional protection against property damage and environmental harm to the area by extending VTS coverage and compliance with VTS rules. This amendment would eliminate any use of Haro Strait by deep draft tank vessels strictly as a means of avoiding the Puget Sound VTS Tank Vessel Rules.

Proposed Sections 161.183 and 161.187. These proposed amendments are changes to the TSS and Precautionary Areas from Precautionary Area "SA"; relocation on buoy "SB" closer to Marrowstone Point; relocation of buoy "SC" to a position due west of Bush Point; relocation of buoy 'SD" to a position northwest of its current location; relocation of buoy "SE" to a position east of its current position; elimination of buoy "SF"; relocation of buoy "SG" further to the north; and relocation of buoy "T" to a position west of Alki Point. The desired results of these changes are to provide additional safety for the heavy traffic flows which intersect in the area of Admiralty Inlet; allow slower commercial vessels to take advantage of current effects in the Marrowstone Island and Double Bluff areas; reduce wake damage from deep draft vessels in the Point No Point area; straighten the lanes south of Point No Point; reduce conflict between sailboat and commercial traffic by providing additional clearance from shore in the Meadow Point area; and relocate Precautionary Area "T" to better accommodate the Washington State Ferries (Bremerton/Seattle).

Environmental Impact Statement

A Draft Environmental Impact Statement (DEIS) concerning this proposal has been prepared. However due to printing delays the DEIS is not expected to be available for distribution until late April 1979.

Comments and suggestions concerning the DEIS are solicited from interested parties and may be submitted in writing or made at the public hearings scheduled on this proposed rulemaking. The Draft statement will be available for review by interested state and local governmental agencies from the State and Areawide Clearinghouses established by Office of Management and Budget Circular No. A-95 (Revised.). Copies of the Draft Statement may otherwise be requested by interested parties from: Commandant (G-WLE/73), (Puget Sound Tank Vessel Operations), U.S. Coast Guard, Washington, D.C. 20590.

Summary of Regulatory Evaluation

This proposed rulemaking has been reviewed for economic effects under Deparetment of Transportation Regulatory Policies and Procedures published February 26, 1979 (44 FR 11034). The Coast Guard estimates that their are approximately sixty-eight U.S. and one-thousand two hundred forty-eight foreign flag tank vessels between 40,000 and 125,000 deadweight tons which could be affected by this proposed rulemaking; and approximately eight U.S. and two hundred thirty-two foreign flag tank vessels between 100,000 and 125,000 deadweight tons that could theoretically be affected by the proposed additional navigation equipment requirements. Of the total number of foreign vessels theoretically affected, it is estimated that less than one-half would actually enter the Puget Sound area.

The most significant economic impact associated with this proposed rulemaking would be the increase in cargo transportation costs resulting from the prohibition of tank vessels larger than 125,000 deadweight tons. Assuming the Puget Sound regional refinery throughput at about 325,000 barrels per day, 365 days per year, the annual transportation cost for crude oil only would be approximately $74.4 million without a tanker size limit and $101 million with a tanker size limit.

The cost per year of these proposed regulations, in aggregate, is estimated at approximately $4.2 million with a size limit and $11.6 million without a size limit. If this cost is added to the cost of crude petroleum transportation the total would be approximately $86 million without a size limit and $105 million with a size limit.

If there were no size limit, the Mobil, Shell and Texaco refineries would probably complete dredging and other facility improvements to accomodate vessel larger than 125,000 DWT. Total cost for these improvements is estimated at approximately $54 million. Assuming a ten percent interest rate for capital funds over a twenty year period, the annualized estimated cost for these improvements would be $6.4 million. Adding facility improvement costs to annual transportation costs would increase costs to approximately $92 million without a size limit.

Annual crude oil transportation costs under a regulatory scheme similar to that presently in effect in the area are estimated at approximately $102 million.

If no special regulations for tanker operations were imposed, annual crude oil transportation costs would be approximately $81 million.

An "Evaluation" of these regulations is filled in the public docket (CGD 78-041). Copies of this Evaluation may be requested from: Commandant (G-WLE-73) U.S. Coast Guard, Washington, D.C. 20590.

In consideration of the foregoing, it is proposed that Part 161 of Title 33 of the Code of Federal Regulations be amended as follows:

1. By adding new §§ 161.101(c)(5) and (d) to read as follows:

§ 161.101 Purpose and applicability.

* * * * *

(c) * * *

(5) Each small passenger carrying vessel certificated in accordance with 46 CFR Part 175 through 185 (Subchapter T) when carrying more than six passengers.

(d) The Tank Vessel Rules in §§ 161.143-161.146 apply to all tank vessels of 40,000 deadweight tons or above carrying oil or other hazardous substances as cargo.

2. By revision § 161.103 to read as follows:

§ 161.103 Definitions.

As used in § 161.101 through § 161.189—

(a) "Displacement ton" means the weight of water displaced by a vessel expressed in tons of 2240 pounds.

(b) "ETA" means estimated time of arrival.

(c) "Hazardous Substances" are those substances, other than oil, designated by the Environmental Protection Agency in 40 CFR Part 116.

(d) "Net bottom clearance" means the minimum distance between any portion

of the hull of the vessel and the ground, at any time.

(e) "Oil" means oil of any kind or in any form, including but not limited to, petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes other than dredged spoil.

(f) "Person" includes an individual, firm, corporation, association, partnership, and governmental entity.

(g) "Precautionary Area" means an area of the TSS at the entrance of one or more traffic lanes where vessel traffic converges from two or more directions.

(h) "Tanker" or "Tank Vessel" means any vessel especially constructed or converted to carry oil or other hazardous substances in bulk in the cargo spaces.

(i) "Tug Assistance" means a tug or tugs are physically connected to a vessel in such a manner as to be capable of applying required forces with minimum time delay.

(j) "Tug Escort" means that a tug or tugs are accompanying a vessel and are immediately available to be connected to the vessel to provide assistance as required.

(k) "Separation Zone" means an area of the TSS that is located between two traffic lanes to keep vessels proceeding in opposite directions a safe distance apart.

(l) "Static bollard pull" means the force in pounds that a vessel is capable of exerting against a stationary object. Astern force means the tug is backing; ahead force means the tug is moving ahead.

(m) "Traffic lane" means an area of the TSS in which all vessels ordinarily proceed in the same direction.

(n) "Traffic Separation Scheme" (TSS) means the network of traffic lanes, separation zones, and precautionary areas in the VTS Area.

(o) "Vessel Traffic Center" (VTC) means the shore based facility that operates the Puget Sound Vessel Traffic Service.

(p) "Vessel Traffic Service Area" (VTS Area) means the area described in § 161.180.

3. By revising § 161.105(f) and adding a new § 161.105(g) to read as follows:

§ 161.105 Laws and regulations not affected.

* * * * *

(f) International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS).

(g) Any other applicable laws or regulations.

4. By revising § 161.107(a) to read as follows:

§ 161.107 VTC directions.

(a) During conditions of vessel congestion, adverse weather, reduced visibility, or other hazardous circumstances in the VTS Area, the VTC may issue directions to control and supervise traffic, and may specify times when vessels may enter, move within or through, or department from ports, harbors, or other waters in the VTS Area.

* * * * *

5. By designating the existing text in § 161.122 as paragraph (a) and adding a new paragraph (b) to read as follows:

§ 161.122 Radiotelephone equipment.

* * * * *

(b) Vessels subject to the Tank Vessel Rules in §§ 161.143–161.146 must be equipped with at least two radiotelephones, each capable of communicating on the designated VTS frequency and with assisting tug boats. One of the required radiotelephones must be capable of battery operation.

6. By revising § 161.128(f) to read as follows:

§ 161.128 Initial Report.

* * * * *

(f) Anticipated vessel speed in knots while in the VTS Area.

* * * * *

7. By adding a new § 161.130 to read as follows:

§ 161.130 Tank vessel reports.

When the report required by § 161.128 is made, the following additional information must be reported to the VTC for each tank vessel of 40,000 deadweight tons or above:

(a) The deadweight tonnage and the displacement tonnage at which the vessel is operating.

(b) The name of each assisting or escorting tug.

(c) The ahead and astern static bollard pull force in pounds of each tug, provided this information has not previously been filed with the VTC. If the information has been previously filed with the VTC, this fact must be reported.

(d) The maximum draft at which the vessel is operating.

8. By revising § 161.135(a) to read as follows:

§ 161.135 Report of impairment to the operation of the vessel.

* * * * *

(a) Any condition on the vessel that may impair its navigation such as fire or defective propulsion machinery, steering equipment, radar, gyrocompass, echo depth sounding device, communications equipment or any defect in the equipment required by § 161.144.

* * * * *

9. By revising § 161.136(a) to read as follows:

§ 161.136 Ferry vessels.

(a) A ferry vessel operating in the VTS Area on a schedule and a route that crosses the TSS, both of which have been previously furnished to the VTC, need not comply with §§ 161.128, 161.131 and 161.142. However, each ferry vessel must report the following information to the VTC within five minutes of each departure from a ferry terminal:

(1) The name of the ferry vessel.

(2) Time and point of departure of the ferry vessel.

(3) Destination of the ferry vessel.

* * * * *

10. By adding new §§ 161.143 thru 161.146 under a center heading to read as follows:

Tank Vessel Rules

§ 161.143 Navigation requirements.

(a) Tank vessels larger than 125,000 deadweight tons bound for a port or place in the United States may not operate in the VTS area described in section 161.180.

(b) Tank vessels of 40,000 deadweight tons or above shall not transit the waters bounded by latitudes 48°24'N and 48°48'N and longitudes 122°26'W and 123°17'W, or the waters of Puget Sound and connecting waters lying south and east of a straight line between Point Partridge and Point Wilson at the entrance to Admiralty Inlet, or the waters of Port Angeles west of a line drawn in the direction of 150° true from Ediz Hook Light (Light List number 2248) to the shore, if the prevailing winds exceed 40 knots, or if winds are predicted by the VTC to exceed 40 knots, during the vessels transit, unless specifically authorized by the VTC.

(c) When transiting the areas described in paragraph (a) of this section, tank vessels shall be navigated as close to the centerline of a one-way traffic channel, or to the right inside quarter of a two-way traffic channel, as is safe and practicable under existing circumstances, unless otherwise directed by the VTC.

(d) All tank vessels must have a minimum net bottom clearance of three feet. Factors to be considered in determining net bottom clearance include the topography over which the vessel is operating, water density, and the effects of sea state, vessel speed and maneuvers.

§ 161.144 Equipment requirements.

(a) The navigating bridge of each tank vessel of 40,000 deadweight tons or above must be equipped with a device capable of determining instantaneously the speed of the vessel through the water.

(b) All tank vessels of 100,000 deadweight tons or above must, in addition to the equipment required by 33 CFR 164.35, be equipped with: a rate of turn indicator graduated in degrees per minute; a propeller shaft RPM indicator; and a Doppler sonic navigation device capable of registering fore, aft, and athwartship vessel movement.

(c) Each of the devices required by paragraph (b) of this section must have readouts capable of being read from the main steering station.

(d) The port and starboard navigating bridge wings of each vessel specified in paragraph (b) of this section must be equipped with repeaters to indicate the vessel's true heading, propeller shaft RPM and rudder angle.

(e) The requirements of this section are effective [six months from effective date].

§ 161.145 Tug escort and tug assistance requirements.

(a) Each tank vessel operating within the VTS area east of a line extending from Discovery Island Light (Light List Number 2246) south to New Dungeness Light (Light List Number 2256), must have tug escort or tug assistance capable of providing a total ahead static bollard pull in pounds equal to not less than one-half of the tank vessel's deadweight tonnage (measured in tons of 2240 pounds).

(b) Each tank vessel operating in the waters described in § 161.143(b) must have tug assistance capable of providing a total astern static bollard pull in pounds sufficient to stop the advance and transfer of the vessel through the water within an area of safe navigation. Tug assistance requirements shall be determined by use of the formula $F=KDV^2$, where;

F = Total static astern bollard pull of the assisting tugs in lbs.
V = Vessel speed through the water in knots.
D = Vessel displacement tonnage, actual.
K = Factor applying to area traversed, (see Table 161.146(a).)

When F is a known constant, ship's speed may be adjusted for the area being transitted by use of the formula $V=\sqrt{\frac{F}{KD}}$ or by reference to Graphs 161.146 (a) through (h).

(c) Tug assistance requirements must be based on a vessel speed through the water equal to or greater than 15% of the prevailing wind speed. Additionally, for prevailing wind speeds of 30 knots and greater, tug assistance requirements must be based on a ship speed through the water of not less than six knots.

11. By adding a new § 161.157 to read as follows:

§ 161.157 Vessel speed and wake control.

Upon receipt of an advisory from the VTC that the tide exceeds a stage of 11.0 feet at Seattle, all vessels operating in the waters of the VTS Area south and east of a line drawn between Point Wilson and Davidson Rocks in the Strait of Juan de Fuca must proceed at a speed that will produce minimum wake consistent with maintaining ability to maneuver safely.

12. By revising § 161.174(a)(4) and (b) to read as follows:

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§ 161.174 Entering Rosario Strait.

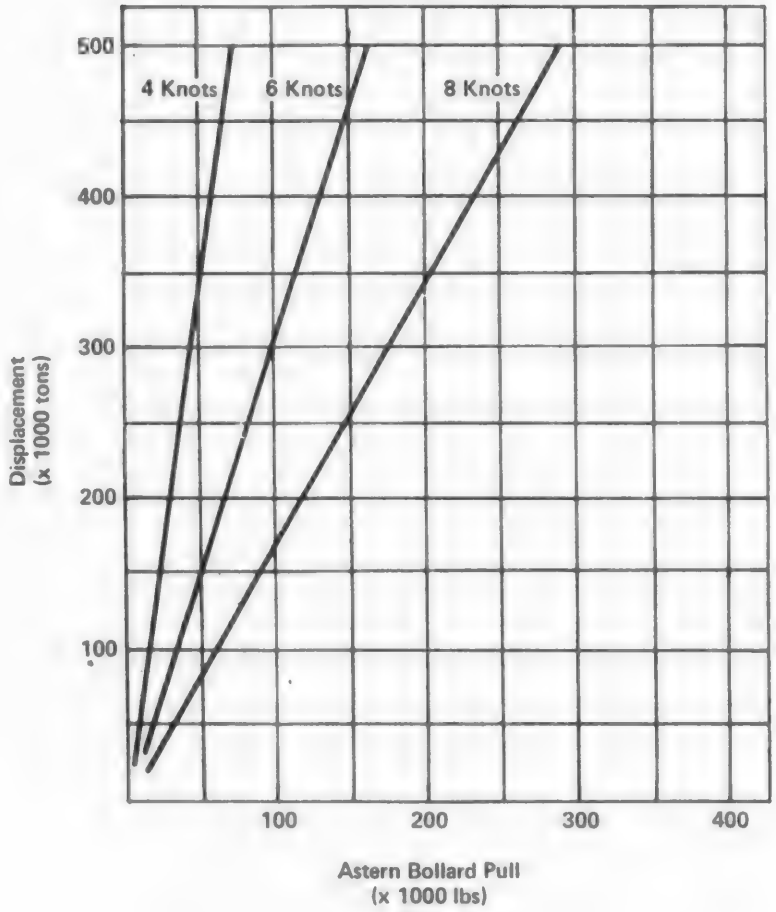
(a) * * *

TABLE 161.146 (a)

Tug Assistance Factors (K)

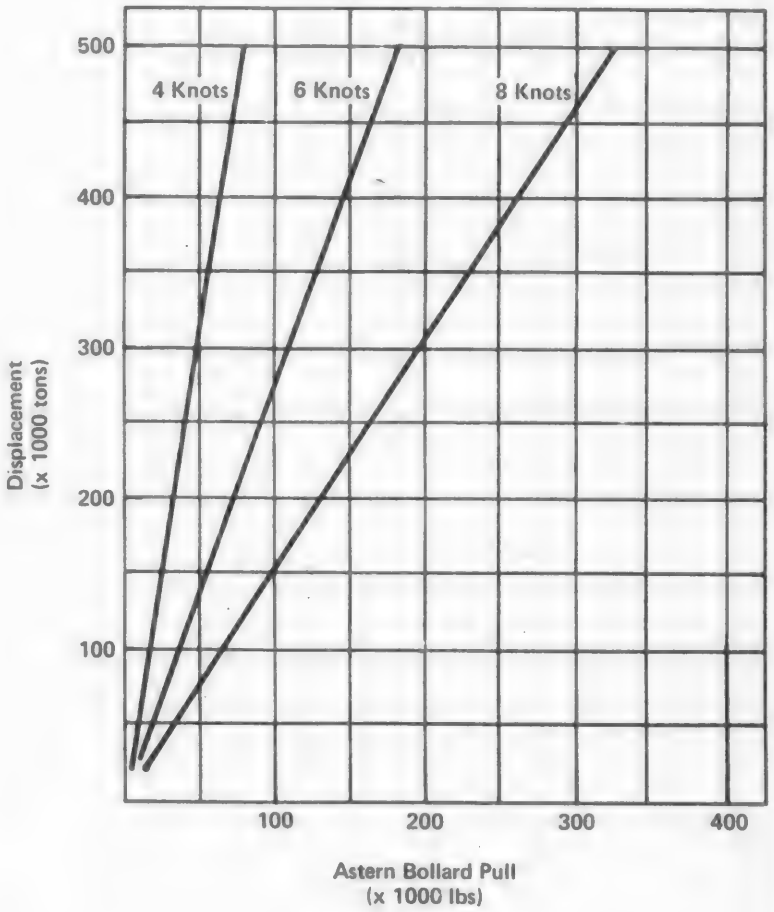
AREA	SEGMENT	TUG ASSISTANCE FACTOR "K"
Rosario Strait	Buoy "RB" to Belle Rock	.01015
	Belle Rock to N. Peapod Rock	.02118
	N. Peapod Rock to Clemente Reef	.01262
Haro Strait	Precautionary Area to Tom Point	.00898
	Tom Point to Turn Point	.01167
	Turn Point to East Point	.00898
	East Point to Patos Island	.01167
Bellingham Channel to Anacortes	"RB" Buoy to Abreast of Guemes Chn.	.01015
	Abreast of Guemes Channel to Indian Village	.06588
	Indian Village to Abreast of Viti Rock and Vendovi I.	.03572
	Vendovi Island to William Point	.01262
	William Point to Anacortes	.06588
Guemes Channel		.15203
Admiralty Inlet to Puget Sound	Precautionary Zone to Three Tree Point	.00898
	Three Tree Pt. to Browns Point	.01262
Port Angeles		.03572

K Factor: .00898

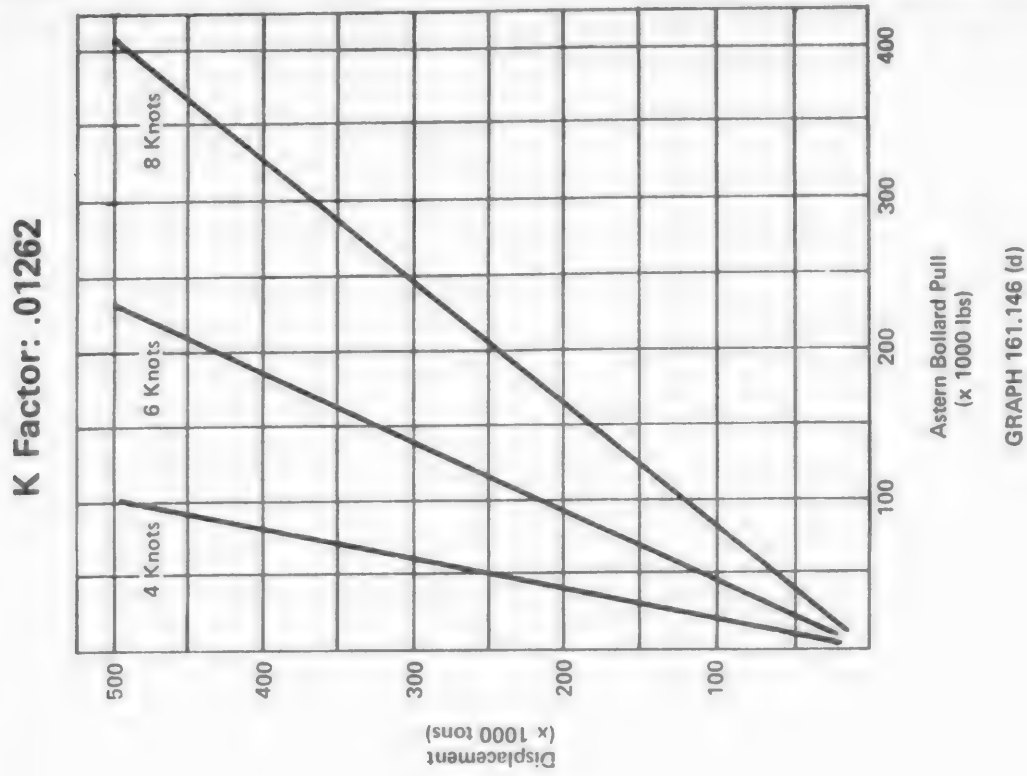


GRAPH 161.146 (a)

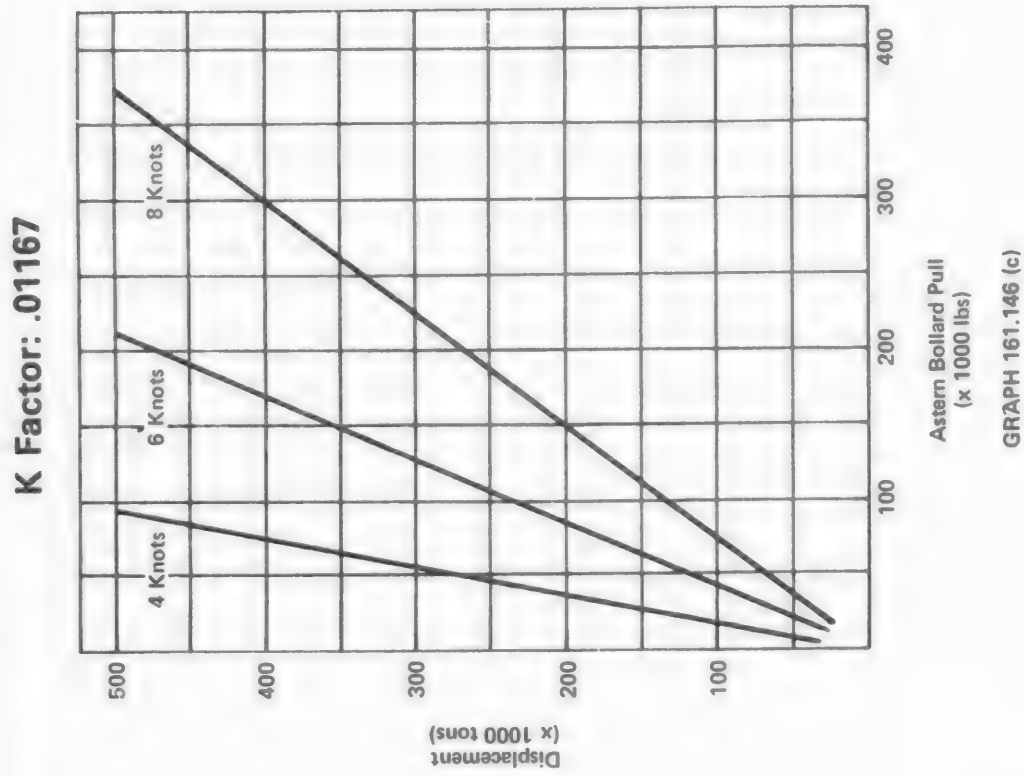
K Factor: .01015



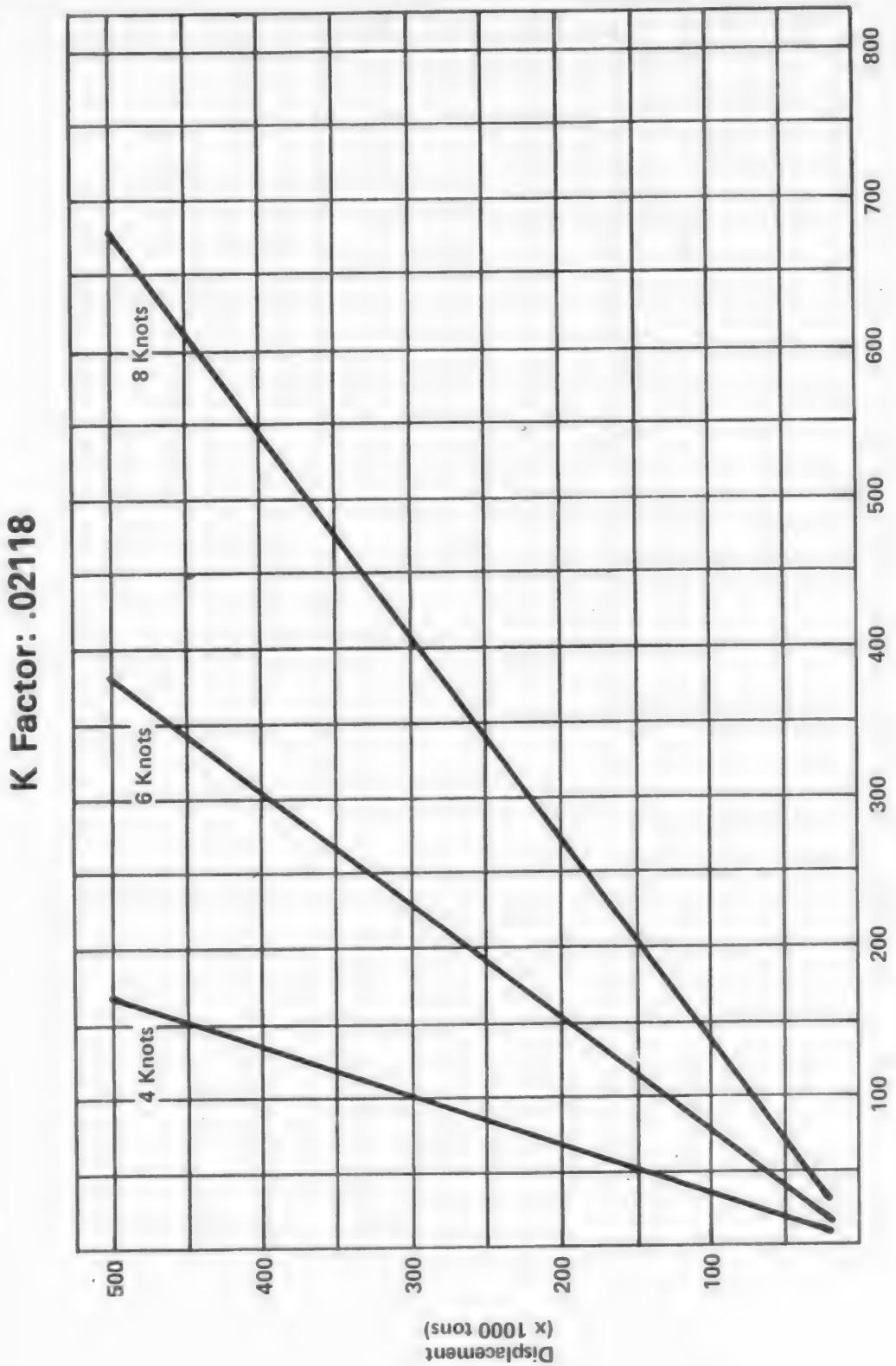
GRAPH 161.146 (b)



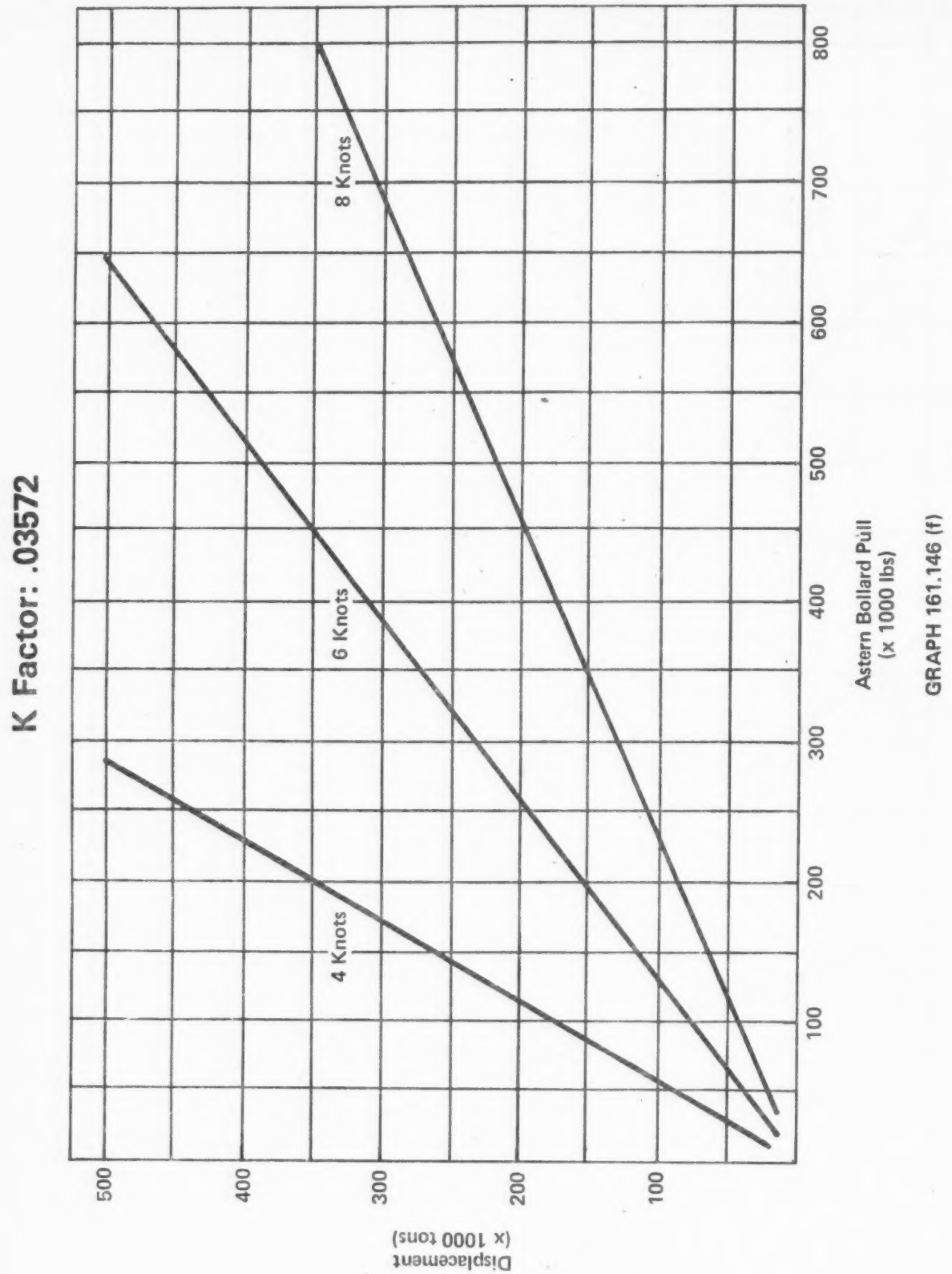
GRAPH 161.146 (d)



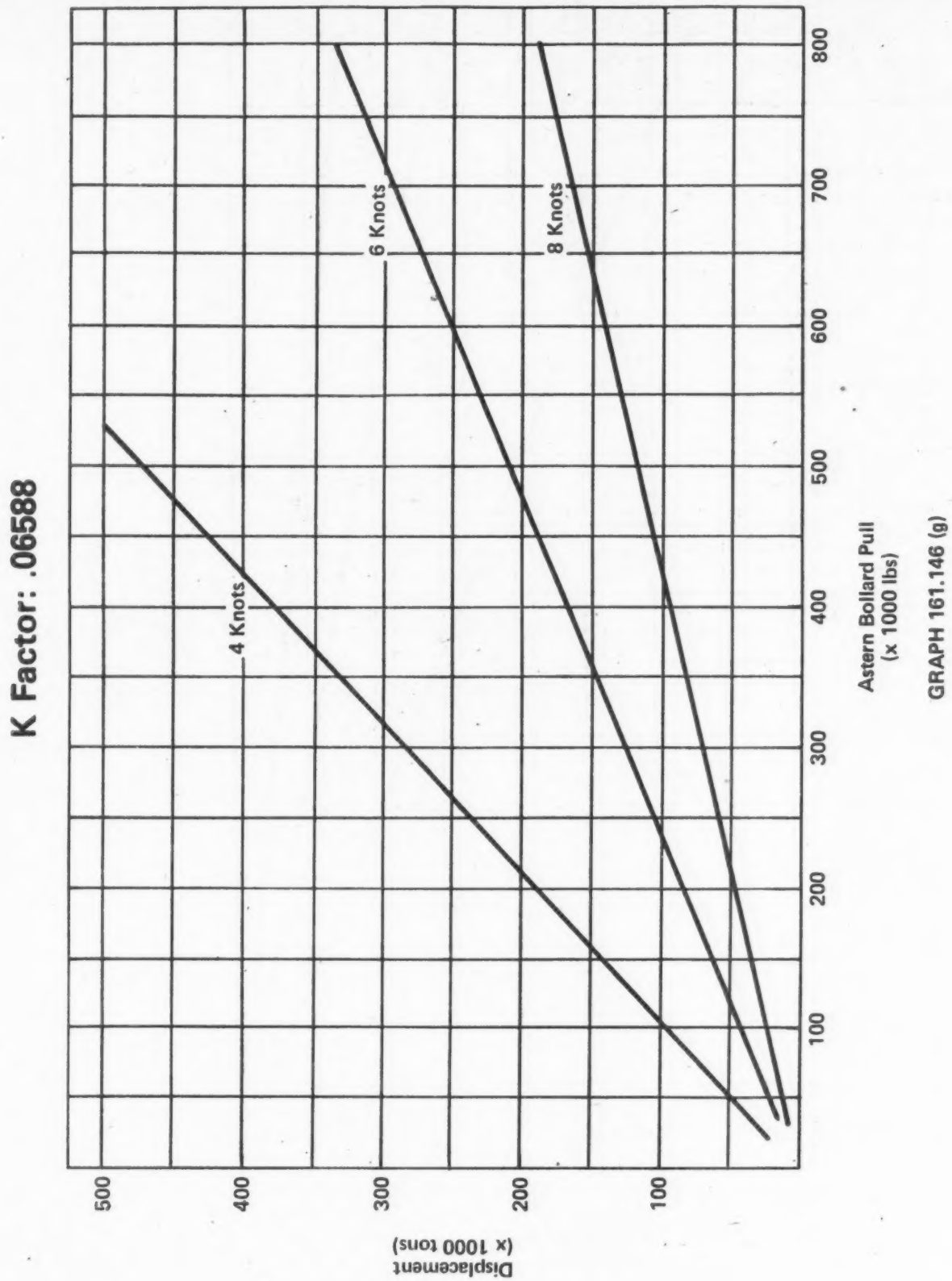
GRAPH 161.146 (c)



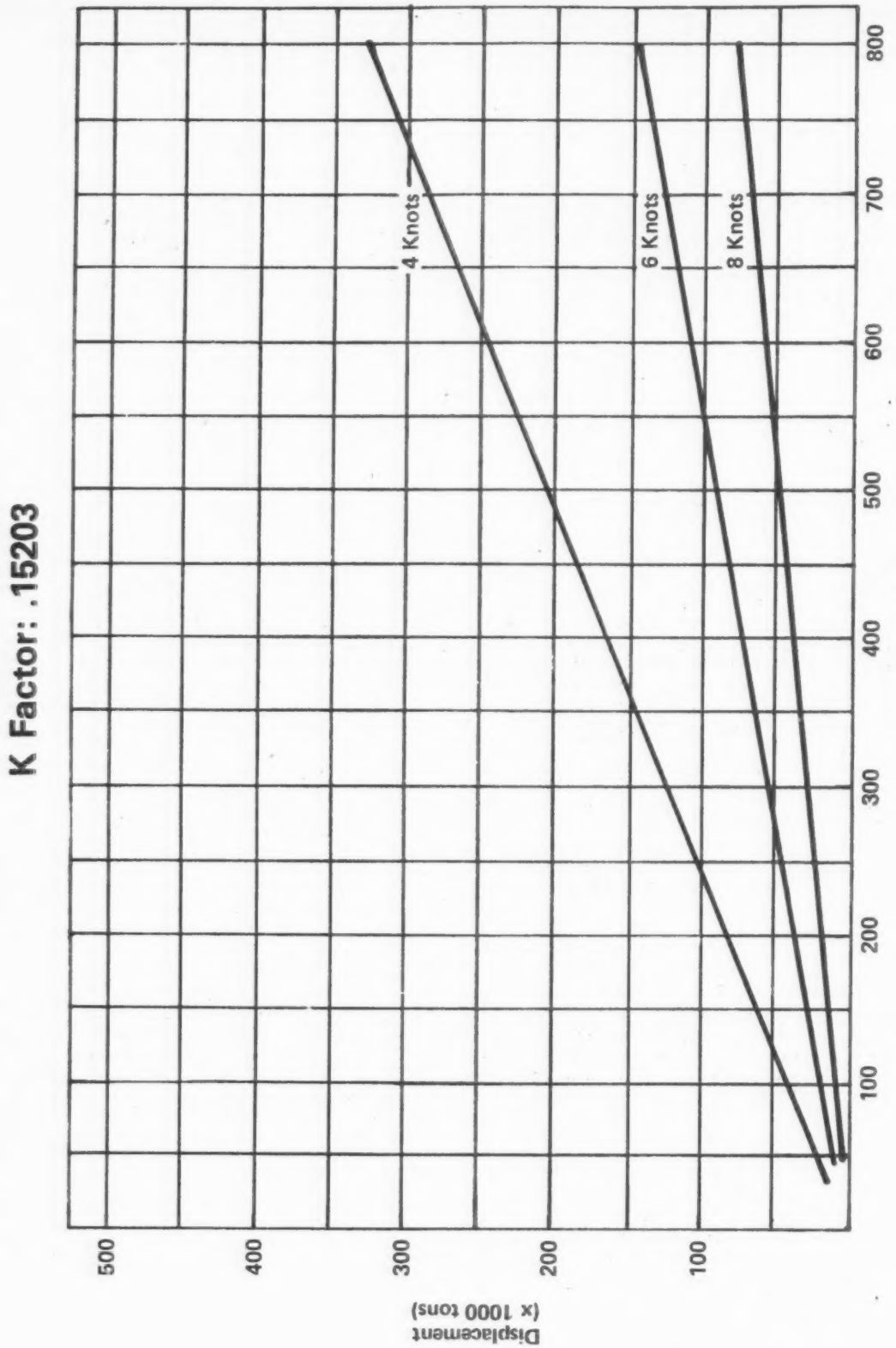
GRAPH 161.146 (e)



GRAPH 161.146 (f)



GRAPH 161.146 (g)



GRAPH 161.146 (h)

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(4) The vessel is free of any conditions that may impair its navigation such as fire, or any defect in its propulsion machinery, steering equipment, radar, gyrocompass, echo depth sounding device, internal communications equipment or any equipment required by § 161.144.

(b) A vessel of 75,000 DWT or above may not enter Rosario Strait unless permission to enter is obtained from the VTC.

13. By revising § 161.180 to read as follows:

§ 161.180 VTS Area.

The VTS Area consists of the navigable waters of the United States inshore of a straight line drawn from the northern most point of Angeles Point to its intersection with the U.S./Canadian International Boundary line at latitude 48°17′ N, longitude 123°14′50″ W, thence north and east along the U.S./Canadian International Boundary line to latitude 48°49′50″ N, thence due north to the U.S./Canadian International Boundary line at latitude 49°00′08″ N, longitude 123°00′30″ W, thence due east to the shore. This area includes waters in the Strait of Georgia, Haro Strait, Rosario Strait, the Strait of Juan de Fuca, Port Angeles, Belingham Bay, Padilla Bay, Admiralty Inlet, Puget Sound, Possession Sound, Elliot Bay, Hood Canal, Commencement Bay, the narrows west of Tacoma, Carr Inlet, Case Inlet and U.S. navigable waters adjacent to these areas.

14. By revising § 161.183(c) to read as follows:

§ 161.183 Separation zones.

* * * * *

(c) The latitudes and longitudes describing the centerline of the separation zone are:

(1) * * *

(ii) 48°11′37″ N., 122°52′40″ W.

* * * * *

(3) * * *

(ii) 48°13′04″ N., 122°51′24″ W.

* * * * *

(5) * * *

(iii) 48°13′22″ N., 122°48′55″ W.

(6) * * *

(i) 48°10′48″ N., 122°46′58″ W.

(ii) 48°06′48″ N., 122°39′36″ W.

(iii) 48°02′28″ N., 122°38′20″ W.

(7) Between precautionary area "SC" and "SE",

(i) 48°01′20″ N., 122°37′37″ W.

(ii) 47°57′53″ N., 122°34′42″ W.

(iii) 47°55′46″ N., 122°30′14″ W.

(8) Between precautionary area "SE" and "SG",

(i) 47°54′49″ N., 122°29′17″ W.

(ii) 47°46′31″ N., 122°26′23″ W.

(9) Between precautionary area "SG" and "SH",

(i) 47°45′19″ N., 122°26′21″ W.

(ii) 47°40′19″ N., 122°27′38″ W.

(10) Between precautionary area "SH" and "T",

(i) 47°39′05″ N., 122°27′42″ W.

(ii) 47°35′12″ N., 122°27′06″ W.

(11) Between precautionary area "T" and "TC",

(i) 47°33′59″ N., 122°26′47″ W.

(ii) 47°26′53″ N., 122°24′12″ W.

(iii) 47°23′07″ N., 122°21′08″ W.

(iv) 47°19′54″ N., 122°26′37″ W.

(12) Between precautionary area "CA" and "C",

(i) 48°44′15″ N., 122°45′39″ W.

(ii) 48°41′39″ N., 122°43′34″ W.

Note: The southbound lane of the traffic separation scheme described by paragraphs (6)(i) and (6)(ii) is widened at its entrance from precautionary area "SA" by a line bearing 120.0°T from a point at the edge of precautionary area "SA" at latitude 48°10′04″ N., longitude 122°47′41″ W. to the point of first intersection with the southbound lane at latitude 48°09′14′ N., longitude 122°45′30″ W.

15. By revising § 161.187 to read as follows:

§ 161.187 Precautionary areas.

* * * * *

(f) Precautionary area "SA". A circular area of 4,000 yards radius centered at latitude 48°11′28″ N., longitude 122°49′43″ W.;

(g) Precautionary area "SC". A circular area of 1,250 yards radius centered at latitude 48°01′52″ N., longitude 122°38′05″ W.;

(h) Precautionary area "SE". A circular area of 1,250 yards radius centered at latitude 47°55′25″ N., longitude 122°29′29″ W.;

(i) Precautionary area "SG". A circular area of 1,250 yards radius centered at latitude 47°45′55″ N., longitude 122°26′11″ W.;

(j) Precautionary area "SH". A circular area of 1,250 yards radius centered at latitude 47°39′42″ N., longitude 122°27′48″ W.;

(k) Precautionary area "T". A circular area of 1,250 yards radius centered at latitude 47°34′34″ N., longitude 122°27′00″ W.;

(l) Precautionary area "TC". A circular area of 1,250 yards radius centered at latitude 47°19′30″ N., longitude 122°27′19″ W.

(Sec. 2 Pub. L. 95–474, Port And Tanker Safety Act of 1978, 92 Stat 1471, (33 U.S.C. 1221 et. seq.); 49 CFR 1.46(n)(4)).

April 9, 1979.

J. B. Hayes,

Commandant, U.S. Coast Guard.

[CG 78-041]

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